

Interpreting and Using the New Outcome and Case Mix Reports

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This presentation introduces new OASIS-based reports that are now available to you -- variations on the OBQI outcome and case mix reports. The new reports are available on the CASPER system, just as the other OASIS-based outcome reports are.

New Reports To Be Available

- **3-column case mix report**
 - **current vs. prior and national reference**
- **3-bar outcome report**
 - **risk-adjusted**
 - **descriptive**

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There are two new reports:

1) A “3-column” case mix report that includes information on a home health agency’s patients during a “current” period compared to a “prior” period, and compared to a “reference” group of home health agency patients across the nation,

and

2) a “3-bar” outcome report that includes similar comparisons (home health agency current outcomes compared to the same agency’s prior outcomes and compared to national reference outcomes). Like the 2-bar OBQI outcome report, the new 3-bar report has two sections - a risk-adjusted section and a descriptive section.

Handout: Sample 3-column Case Mix Report

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On pages 12 and 13 of your materials, you will find a sample 3-column case mix report for Faircare Home Health Services. Please turn to this report -- we will review the new report components.

First, notice that the report is in the same format as the 2-column case mix report. It also includes the same case mix measures, which are defined and computed in the same way that they have been in prior case mix reports. (Additional information on the case mix measures and their data sources within OASIS can be found in the manual, *Quality Monitoring Using Case Mix and Adverse Event Outcome Reports*, which is available on the CMS OASIS web site.)

New Components of the Case Mix Report

- **“Prior Mean” column**
- **Indicators of statistical significance**
 - ***, ** (current - reference)**
 - **+, ++ (current - prior)**

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The new components of the case mix report include the following:

- A third column, which is labeled “Prior Mean,” is located between the “Current Mean” and the “Reference Mean” columns, which you should recognize from the “2-column” version of the report.
- Along with the third column, additional indicators of statistical significance are included, which differ between the “prior” and the “reference” columns.

The new “Prior Mean” column contains the agency’s values on the case mix measures for the 12-month period prior to the current period. Notice (from the upper right-hand corner of the report) that Faircare’s “current” period is January through December 2002. The “prior” period will be the 12 months before this -- or January through December 2001. The “reference” period is for the same interval as the “current” period -- January through December 2002.

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New Components of the Case Mix Report

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- **Indicators of statistical significance**
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(continued from prior page) On all the case mix measures, the “current” value (in the left-hand column) will be compared to the “prior” value (the middle column) and (separately) to the “reference” value (in the right-hand column). It is possible for a particular measure to have a statistically significant difference between the “current” and the “prior” values, between the “current” and the “reference” values, or to both (or neither) of these values.

Two separate indicators of statistical significance are utilized in the report: Single or double asterisks (* or **) are used to indicate the presence of statistically significant differences between “current” and “reference” values (just as they are used in the 2-column report). Single or double plus signs (+ or ++) are used to indicate the presence of statistically significant differences between “current” and “prior” values.

Statistical Significance Comparisons

- **Different significance levels for the two comparisons**
- **Rationale: Typically, fewer significant differences are found in the agency's year-to-year comparisons**

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Statistical significance is greatly impacted by the size of the groups being compared -- in this case, by the number of episodes in the current, prior, and reference periods. The reference group, because it consists of all episodes for a 12 month period in the entire nation, is extremely large, and even small differences between the reference sample and an agency of moderate size tend to be statistically significant. Therefore, a very low probability threshold is used for the comparison between these two groups, to highlight only the most significant differences between an agency's current case mix and the national reference group. A single asterisk (*) marks a probability of one percent (or 0.01) or less that the difference between the two values being compared is due to chance. A double asterisk (**) marks a probability of one tenth of one percent (or 0.001) or less that the difference between the two values is due to chance.

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Statistical Significance Comparisons

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(continued from prior page) The number of cases (episodes) on which an agency's year-to-year comparisons are based is, of course, much smaller than the national reference sample. Therefore, a slightly higher (larger) level of statistical significance is used for the comparison of the agency's case mix between the two years (agency "current" and "prior"). A single plus sign (+) marks a probability of 5% (0.05) or less that the difference between the two values is due to chance. A double plus sign (++) marks a probability of 1% (0.01) or less that the difference between the two values being compared is due to chance.

If the same significance criteria were applied to both comparisons, it is likely the all current-reference comparisons would be marked as significant, or that almost none of the current-prior comparisons would appear to be significant. Using different significance criteria makes the report more meaningful to the user.

Handout: Sample 3-bar Outcome Report

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Turn next to pages 14 - 17 in the handout, which contain a sample 3-bar outcome report for Faircare Home Health Services. The risk-adjusted section of the report is found on pages 14 through 16, and the descriptive section is found on page 17.

Risk-Adjusted 2-bar and 3-bar Report

- **One additional outcome measure is now risk-adjusted**
- **Any Emergent Care has moved from the descriptive to the risk-adjusted report**

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A new feature that is common to the 2-bar report and the new 3-bar report is the addition of a measure to the risk-adjusted section of the report. The outcome measure, “Any Emergent Care” has been moved from the descriptive report section, due to recent improvements in the risk model for this measure. Because of this change, there are no longer any utilization outcomes (UOs) included in the descriptive section of the report -- all UOs are now found in the risk-adjusted section.

Two Sections in the Outcome Report

- **30 outcome measures in the risk-adjusted report**
- **11 outcome measures in the descriptive report**

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This means that of the 41 outcome measures in the report, 30 are found in the risk-adjusted section, and 11 are found in the descriptive section.

Similarities to the 2-bar Outcome Report

- **Report period**
- **Case numbers (agency, reference, eligible)**
- **Types of outcomes**
- **Measure definitions**
- **Statistical significance levels**

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Despite the addition of the third bar, there are many similarities to the 2-bar outcome report. The location of the dates for the report period and the case numbers in the upper right-hand corner of the report is roughly the same. The length of time covered continues to be 12 months, and the inclusion criteria are the same, i.e., patient episodes are included if both the start (or resumption) of care and the discharge (or transfer to inpatient facility) occur within the covered time period. The report contains both End-Result Outcomes (EROs) and Utilization Outcomes (UOs). The definitions of the measures (e.g., Improvement, Stabilization) are the same.

On the 3-bar outcome report, the level of statistical significance remains constant between the groups being compared (i.e., 10% or less, 5% or less). However, the marker of significance varies according to the groups being compared. For the “current” to “reference” comparison, the statistical significance markers continue to be a single asterisk (*) for a probability of 10% or less and a double asterisk (**) for a probability of 5% or lower. For the “current” to “adjusted prior/prior” comparison, the markers are a single plus sign (+) for a probability of 10% or less and a double plus (++) for a probability of 5% or lower.

New Bar Included in the 3-bar Outcome Reports

- **Adjusted Prior/Prior**
- **Shading**
- **Data source**
- **Meaning of the information**

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The new bar included in the 3-bar report is labeled “Adjusted Prior” on the risk-adjusted section of the report and “Prior” on the descriptive section.

It is located between the two bars representing the “current” and “reference” rates, and it is shaded gray to distinguish it from those bars.

The outcome rate represented by this bar is derived from OASIS data for patient episodes of care occurring during the “prior” period -- which is the 12-month period immediately preceding the “current” period selected by the user. Like other OASIS-derived reports, only Medicare and Medicaid patients are included in this report.

The new bar allows a comparison of the agency’s current rate for a specific outcome to the rate achieved in the prior period and a simultaneous comparison to the reference rate derived from national OASIS data.

Data Source for the Adjusted Prior/Prior Bar

- **Complete episodes falling within the prior 12-month period**
- **Same number of episodes as last year's report?**

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To repeat, the “prior” outcome rate reflects only complete episodes of care, from start (or resumption) of care to discharge (or transfer to inpatient facility) that occurred within the prior 12-month period. Episodes that span the prior and current periods (i.e., begin in one period and end in the next) are not included in either period. This is done to ensure that current-prior comparisons are “clean,” in the sense that they reflect outcomes attributable to care provided during distinct periods of time, such as before and after implementation of specific quality improvement actions by the agency.

If an agency generates a report for the 12-month period ending in December 2002 -- meaning that the prior period would have ended in December 2001 -- and compares the number of episodes to a 2-bar report generated at an earlier date with an end date of December 2001, there may be a different number of 2001 episodes in the 3-bar report. If there is a difference, the more recent report will typically have a slightly higher number of cases. This is due to additional assessments or data corrections that were submitted in the interim, which are likely to increase the number of completed episodes of care that are available for inclusion in the report.

Meaning of “Adjusted Prior”

- Risk adjustment of prior to current rate as well as of reference to current agency rate
- Current-prior comparison takes into consideration agency case mix changes

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What is the “Adjusted Prior” outcome rate that is reflected by the new bar on the risk-adjusted outcome report? Because there may have been changes from one year to the next in agency case mix, and some of those case mix changes may impact patient outcomes, the agency’s “prior” outcome rate is risk-adjusted to take these changes into account. The “reference” rate is also risk-adjusted to take into account any case mix differences between the agency and the national reference data. In other words, both comparisons presented in the 3-bar risk adjusted outcome report have risk adjustment applied to them.

The “current” rate remains the agency’s actual or observed outcome rate for the current period. The “reference” rate is the observed national rate adjusted to reflect the difference between the agency’s predicted rate and that of the national home health patient population. The “adjusted prior” rate is the prior year’s observed outcome rate, adjusted by the difference between the predicted rates for the prior and current year patients, respectively.

(For additional discussion of risk adjustment, refer to Chapter 3 of the *OBQ/Implementation Manual* or the explanatory document on risk adjustment found on the OASIS web site at:

<http://www.cms.hhs.gov/providers/hha/RiskAdj1.pdf>.)

Slight Differences Possible in “Adjusted Prior” Outcome Rate

- **“Adjusted Prior” rate compared to last year’s “Current” rate**
- **New data (episodes) may affect rate**
- **Case mix differences from “Prior” to “Current” period may impact rate**
- **Approach: Use only the 3-bar report to make comparisons**

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If an agency makes a side-by-side comparison of last year’s “current” rate and this year’s “adjusted prior” rate for a single outcome (and the identical time period), they may notice slight differences between these two rates. Why might this occur?

- Additional episodes due to new data submissions or data corrections, mentioned earlier, may have affected the “adjusted prior” rate.
- Case mix differences from the “prior” to the “current” period (and the related risk adjustment) may have impacted the rate.
- Revised risk models may have had a slight impact on the risk adjustment for any comparisons.

Any differences between the rates are likely to be quite small. To decrease confusion, it is strongly suggested that only the 3-bar report be used to make any necessary comparisons between “current” and “prior” periods. (Place last year’s report “on the shelf” as a historical document.)

Meaning of “Prior” in Descriptive Report

- **Observed outcome rate**
- **Not risk-adjusted for agency case mix changes from one year to another**

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In the descriptive section of the outcome report, the rates reported for each outcome measure are the observed (or actual) outcome rates for all patients in each group. The agency’s “current” rate is the observed rate among all patient episodes in the specified period, while the “prior” rate applies to episodes in the prior period. No adjustment is made for case mix differences between the agency and the reference group, or for case mix changes within the agency from one year to another.

Importance of the New Information

- **Allows evaluation of your agency's quality improvement activities**
- **Comparison of your own performance over time -- your most important comparison**

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The new third bar in the outcome report allows your agency to evaluate the effects of your own quality improvement activities. Over time, this is your most important comparison, as you work to steadily enhance the outcomes of your agency's patients. The comparison of yourself to yourself, with the goal of continued improvement, is the primary focus of ongoing outcome-based quality improvement (OBQI).

Exercise 1: Review Sample 3-bar Outcome Report

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Turn to page 18 for the instructions for Exercise 1. This exercise uses the report components that you already know (from the 2-bar report) and assists you to extend your familiarity to the 3-bar report. You should work independently for this exercise. Use the sample outcome report from Faircare Home Health Services (pages 14 - 17) and answer the questions listed. Take about 5 minutes for this exercise.

Exercise 1: Review Sample 3-bar Outcome Report

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Discussion:

1. End-Result Outcome cases in the current period = 402. End-Result Outcome cases in the prior period = 374.
2. Utilization Outcome cases in the current period = 601. Utilization Outcome cases in the prior period = 551.
3. The number of cases in the prior period on this (3-bar) report is most likely to be slightly larger than the cases in last year's report. This is due to corrected data or late data submissions, which result in additional episodes for inclusion.
4. The comparison of the "current" outcome rate to the "reference" rate shows a statistically significant difference ($p = .01$). There is not a significant difference between the "current" and the "prior" outcome rates.
5. The comparison of the "current" outcome rate to the "prior" rate shows a statistically significant difference ($p = .00$). The comparison of the "current" rate to the "reference" rate shows a statistically significant difference ($p = .01$). No conclusions can be drawn about the comparison between the "prior" and the "reference" rates, as the data came from different 12-month periods.

Interpreting the 3-bar Outcome Report

- **Refer to your target outcome**
- **Compare your own performance for the current period to that of the prior period**
- **What meaning does this comparison have?**

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As an agency, you will be most interested in the comparison of the outcome rates for your target outcome(s). You are likely to turn immediately to this particular portion of the outcome report to compare your own performance for the current period to that of the prior period. You will do this to determine the impact of your outcome enhancement activities on your patients -- to determine whether you were indeed able to positively affect what happened to your patients (which is the ultimate goal of OBQI).

Exercise 2: Interpret Sample 3-bar Outcome Report

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Turn to page 19 for the instructions for Exercise 2. This exercise provides practice in comparing outcome rates for Faircare Home Health Services between the “current” and “prior” periods. You should work independently for this exercise, using the sample outcome report (pages 14 - 17). Take about 5 minutes to answer the questions listed.

Exercise 2: Interpret Sample 3-bar Outcome Report

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Discussion:

1. For Improvement in Lower Body Dressing, the current year's rate is favorable (and statistically significant) compared to the prior period.
2. For Improvement in Ambulation, the current year's rate is unfavorable (and statistically significant) compared to the prior period.
3. For Improvement in Ambulation, the current year's rate is favorable (and statistically significant) compared to the reference rate.
4. For Any Emergent Care, the current year's rate is favorable compared to the prior year, but this comparison is not statistically significant.
5. For Any Emergent Care, the current year's rate is unfavorable compared to the reference rate. This comparison is statistically significant.
6. For Acute Care Hospitalization, the current year's rate is unfavorable compared to the prior year, but the difference is not statistically significant.
7. For Acute Care Hospitalization, the current year's rate is favorable compared to the reference rate. This comparison is statistically significant.

If an agency selected Any Emergent Care as a target outcome last year, they might have questions as to whether any difference in the current period is due to their outcome enhancement efforts or to the new risk adjustment process. It is not really possible to sort out the separate impacts of either of these activities.

Other Key Points for Report Interpretation

- **Outcome selected for remediation or reinforcement?**
- **Date of Plan of Action (POA) implementation?**

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Accurately interpreting the 3-bar report is not simply a matter of comparing the rates and determining whether statistical significance is present. Two other factors must be considered -- whether the agency selected their target outcome(s) for remediation or reinforcement and exactly when they implemented their Plan of Action (POA) for outcome enhancement. Let's discuss the implications of these factors on the report interpretation.

Remediation or Reinforcement?

- **Remediation:** Agency wants to improve its (unfavorable) outcome rate
- **Reinforcement:** Agency wants to maintain its (favorable) outcome rate

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Remember that when the agency's last outcome report included an outcome that they wanted to improve, they selected this outcome for remediation. This happens when the agency selects a target outcome where their performance is unfavorable to the comparison rate.

In contrast, when the agency's target outcome was favorable to the comparison rate, they may have selected this outcome to reinforce. In this case, they want their target outcome to maintain its favorable rate relative to the reference rate.

The agency's interpretation of their results will be dependent on the reason that they selected their target outcome -- what they desired their outcome enhancement activities to achieve.

POA Implementation Date

- **When agency put new/modified care practices into effect**
- **Intended to favorably impact outcomes**
- **Impacts only episodes beginning after implementation date**

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After an agency selects a target outcome, it develops and implements a Plan of Action (POA). The POA serves as a “road map” for the agency to improve (or to maintain) its target outcome. The POA includes specific aspects of care delivery that the agency wants to spread across the agency, whether these are new practices, modifications of current ones, or reinforcements of practices that some, but not all, clinicians are observing.

Agencies are encouraged to develop and implement their POA soon after they access an outcome report, in order to have the largest impact on future patient episodes. For new or modified care practices to have an impact on outcomes, the clinical staff will need to actually change their approach(es) to providing care. This means that only those episodes that begin after the new or modified care approaches have been implemented actually have the opportunity to show the impact of these practices on patient outcomes. If the agency is accessing its OBQI reports on an annual basis, but a long period elapses before it implements the POA, there are very few patient episodes (in the next report) that can potentially show the impact of new care practices.

The agency thus must take into account the timing of its POA implementation as it interprets the results displayed in the 3-bar outcome report.

Exercise 3: Adding Key Points to the Interpretation of the Report

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Turn to page 20 for the instructions for Exercise 3. This exercise allows you to practice interpreting the 3-bar report under various circumstances that we have just discussed. You can discuss your interpretations with your neighbor as you do this exercise. Use the sample outcome report from Faircare Home Health Services (pages 14 - 17) and answer the questions listed. We'll allow up to 10 minutes for this exercise.

Exercise 3: Adding Key Points to the Interpretation of the Report

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Discussion:

1. Comparing the “current” to the “prior” rates, assuming that Faircare selected this outcome for remediation (to improve), there has been very little impact on this outcome.
2. If Faircare had selected this outcome for reinforcement (to maintain a favorable outcome), the agency has succeeded in maintaining its statistically significant and favorable relationship relative to the national reference rate. Note that when outcomes are selected for reinforcement, the primary comparison is to the reference rate. It is much less common, but not impossible, for agencies focusing on reinforcement to improve their own performance to a statistically significant extent.
3. The new care practices would have been in place for 8 1/2 months, and the outcome rate is essentially the same as last year. The POA has had minimal impact to date.
4. New care practices have been in place for only 3 months, and the outcome rate includes a mixture of episodes -- some before new care practices were implemented, and some after POA implementation. In this situation, it is difficult to draw conclusions about whether outcome enhancement activities are having any impact.
5. Many comparisons are possible in the 3-bar report, which may result in more “study time” to fully understand the information being conveyed.

POA Implementation Date

To Maximize Your Ability to Interpret Report Contents -- Request Report for a Full Year Post-POA Implementation

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Note that in Exercise 3 we have stressed how difficult it can be to draw conclusions from a report that includes episodes of care from both before and after Plan of Action implementation. Therefore, it is strongly suggested that agencies suspend judgment on the impact of their quality improvement activities on patient outcomes until they can obtain an outcome report covering a time interval approximately a full year after POA implementation. This again emphasizes to agencies the importance of quickly following up on their initial outcome report with outcome enhancement activities. The sooner the POA is implemented, the sooner its effectiveness can be evaluated.

Using the 3-Bar Report for OBQI

- **Follow the criteria for selection of target outcome(s)**
- **Follow the steps of the outcome enhancement process**

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In addition to providing a home health agency with the means to evaluate past outcome enhancement activities, the 3-bar report is intended to be used by home health agency staff to initiate a new round of outcome enhancement, as discussed in the *OBQI Implementation Manual*, available at: <http://www.cms.hhs.gov/oasis/obqi2002.zip>. The criteria for selecting target outcome(s) described in the *OBQI Manual* should be followed, with the primary emphasis being on the comparison of “current” outcome rates to “adjusted prior” or “prior” rates. Then agency staff can follow the steps of the outcome enhancement process, as part of a continuous quality improvement program.

Resources

- **Supplement to the OBQI Manual**
- **QIO training and assistance**

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Resources available to home health agencies include:

- A new supplement to the *OBQI Implementation Manual* that describes the new 3-column case mix report and the 3-bar outcome report. This document will soon be available on the CMS web site.
- Quality Improvement Organizations (QIOs) in each state will provide training and assistance to home health agencies for implementation of outcome-based quality improvement programs.

The new reports now make available to home health agencies the full complement of reports for outcome-based quality improvement. They will assist you to prioritize your quality improvement activities and will allow you to monitor your own progress over time in steadily improving your patient outcomes.